

mycoplasmas of bacteria and the protoplasms of plant and animal cells.

The president then gave an account of experiments of his own, in which he has shown that, under the action of the rays from radium emanation dissolved in water, seeds may germinate from two to three times as rapidly as they do in ordinary water. In other experiments he has shown also that, by acting on carbon dioxide and nascent hydrogen in the presence of ultraviolet light, a photosynthesis is effected resulting in the formation of formaldehyde, and this body itself, in the presence of potash, condenses to form a sugar. Further results indicate that photosynthesis in chlorophyll cells, and in nature generally, is due entirely to the action of ultraviolet light, or of the radiations from radioactive bodies. Chlorophyll, indeed, owes its properties to the fact that it is the medium through which these radiations act on the cells. Carbohydrates are produced in nature by the action of ultraviolet light on carbon dioxide and water, and, without this synthesis, all life in any form would be impossible.

Throughout his address Prof. Stoklasa emphasised the need of biologists and of physiologists for a better understanding of the newer developments in experimental physics. A. S. R.

SLEEPING SICKNESS IN THE KATANGA.¹

THE brochure referred to below contains the results of an investigation undertaken by the author into the distribution and other problems of sleeping sickness in the Katanga. His object is to consider the question from a general point of view and to collate the results of two years of work in the northern part of the province. He wishes to prove that "methodical work on the spot is the sole means of combating the evil in each district." If the differences presented by the districts "are lost sight of in attempting to put in practice measures prescribed in ignorance of the actual conditions, only negative, though costly, results can be obtained." With these objects in view, the author sets forth his observations upon the Katanga, its geography, commerce, and people, and upon the special problems of sleeping sickness in that country, such as the origin and progress of the disease, its diagnosis, treatment, and natural course, the distribution and occurrence of the transmitting fly, *Glossina palpalis*, and the results of administrative efforts to cope with the evil. His descriptions are supplemented by nine maps and a number of excellent photographs.

The author's attitude is mainly that of an independent observer offering gratuitous advice to the Belgian administration of the Congo; hence, doubtless, his choice of the French language for publishing his results. His foremost conclusion is that "the first thing to do is to publish the truth in Belgium"; the next, that as a necessary preliminary to efficacious measures, the zones of

Glossina palpalis and sleeping sickness should be delimited accurately; and his third, that when the country has been carefully surveyed from this point of view the problem becomes administrative rather than medical. "For medical men the most simple and radical system of conquering the disease is to remove the people from the proximity of *G. palpalis*; it is for the administration to decide how far this is practicable." He is strongly against the treatment of the infected natives in isolation-camps, which he considers to be of little use, while difficult and costly.

NOTES.

THE King has approved of the awards this year, by the president and council of the Royal Society, of a Royal medal to Prof. W. M. Hicks, F.R.S., for his researches in mathematical physics and investigations on the theory of spectroscopy, and a Royal medal to Prof. G. Elliot Smith, F.R.S., for his researches on the comparative anatomy of the brain. The following awards have also been made by the president and council:—The Copley medal to Prof. Felix Klein, For.Mem.R.S., of Göttingen, for his researches in mathematics; the Rumford medal to Prof. H. Kamerlingh Onnes, of Leyden, for his researches at low temperatures; the Davy medal to Prof. Otto Wallach, of Göttingen, for his researches on the chemistry of the essential oils and the cyclolefines; the Darwin medal to Dr. Francis Darwin, F.R.S., for his work in conjunction with Charles Darwin, and for his researches in vegetable physiology; the Buchanan medal to Colonel William C. Gorgas, of the United States Army, for his sanitary administration of the works of the Panama Canal; the Hughes medal to Mr. William Duddell, F.R.S., for his investigations into technical electricity.

At the annual general meeting of the London Mathematical Society, held on November 14, the following were elected officers and council for the ensuing session:—*President*, A. E. H. Love, F.R.S.; *Vice-Presidents*, H. F. Baker, F.R.S., and J. E. Campbell, F.R.S.; *Treasurer*, Sir Joseph Larmor, M.P., F.R.S.; *Secretaries*, J. H. Grace, F.R.S., and T. J. I'A. Bromwich, F.R.S.; *Other Members of the Council*, W. Burnside, F.R.S., A. L. Dixon, F.R.S., L. N. G. Filon, F.R.S., J. H. Jeans, F.R.S., E. W. Hobson, F.R.S., J. E. Littlewood, H. M. Macdonald, F.R.S., P. A. MacMahon, F.R.S., H. W. Richmond, F.R.S., and A. E. Western.

At the anniversary meeting of the Mineralogical Society, held on November 12, the following officers and members of council were elected:—*President*, Dr. A. E. H. Tutton, F.R.S.; *Vice-Presidents*, Prof. H. L. Bowman, Dr. A. Hutchinson; *Treasurer*, Sir William P. Beale, Bart., K.C., M.P.; *General Secretary*, Dr. G. T. Prior, F.R.S.; *Foreign Secretary*, Prof. W. W. Watts, F.R.S.; *Editor of the Journal*, Mr. L. J. Spencer; *Members of Council*, Mr. T. V. Barker, Mr. W. Barlow, F.R.S., Mr. F. H. Butler, Mr. T. Crook, Mr. J. P. De Castro, Rev. J. M. Gordon, Sir Thomas H. Holland, K.C.I.E., F.R.S., Mr.

¹ "La Maladie du Sommeil au Katanga." By F. O. Stohr (Oxon.) Pp. 83, with maps and illustrations. (London: Constable and Co., Ltd., 1912.) Price 4s. net

B. Kitto, Prof. A. Liversidge, F.R.S., Dr. R. Pearce, Dr. G. F. H. Smith, and Mr. H. H. Thomas.

WE offer our congratulations to *The Electrical Review* upon the celebration of its fortieth anniversary. The first number of our contemporary was issued on November 15, 1872, and the current issue bears the date exactly forty years later. From the first number *The Electrical Review* has represented the best interests of the electrical profession, and has adapted itself to the great changes which have taken place during the period of its existence. How remarkable have been the developments of electrical science and engineering may be judged from a complimentary message which Sir William Preece sends to our contemporary. The prominent electrical industries in 1872 were electroplating and the electric telegraph. The Society of Telegraph Engineers (later to become the Institution of Electrical Engineers) was founded in that year, which was also the year of birth of Mr. W. Duddell, F.R.S., who now occupies the presidential chair of the institution. "The life of *The Electrical Review*," says Sir William, "is a history of the life of the electrical industry." The journal has established an important position as the organ of the practical electrician and manufacturer, and we have no doubt it will continue on its successful career for many years to come.

WE notice with regret the announcement of the death on November 19, in his ninety-seventh year, of Mr. W. B. Tegetmeier, formerly a frequent contributor to NATURE, and whose name is well known to many naturalists. We print the following particulars of his career from an obituary notice in Wednesday's *Times*:—Mr. Tegetmeier was destined for the medical profession, and studied at University College, and though he did not qualify, the knowledge of anatomy and physiology which he acquired was of great service to him as a practical breeder and writer on poultry, pigeons, and general natural history subjects. He was a recognised authority in all that concerned pigeon racing, and his article on "Utilisation of Homing Pigeons" in NATURE of February 4, 1892, is of permanent value. In 1855 he was introduced by Yarrell to Darwin, whom he supplied with a good deal of material in the shape of skulls and skeletons, and for whom he carried out many experiments in breeding. Mr. Tegetmeier's reputation as a breeder and fancier caused him to be chosen as judge at principal shows and secured his appointment as poultry editor of *The Field*, a position which he held for more than forty years, retiring only in 1907. During this period he also contributed largely to the natural history columns of the paper, and for many years supplied the leading articles for *The Queen*. He became a Fellow of the Zoological Society in 1866, and was made an honorary Fellow in 1905; his membership of the British Ornithologists' Union dates from 1873, and he was a frequent exhibitor at the meetings of the society and of the British Ornithologists' Club. In 1854 he published "Profitable Poultry," and in 1856 edited a serial issue of Wingfield and Johnson's "Poultry Book," which seems to have formed the basis for his own "Poultry Book" in 1867; this was a great advance

on any previous work on the subject, and a second edition was called for in 1873. Besides some smaller books on poultry, pigeons, and economics, Mr. Tegetmeier published "Pheasants" in 1873, and, with Colonel Sutherland, a book on horses and mule-breeding in 1895; he also edited and enlarged Blyth's articles on the cranes, and revised R. B. Morris's "British Game Birds" and F. O. Morris's "Nests and Eggs of British Birds"; and contributed the article on poultry to the ninth edition of the "Encyclopædia Britannica." The funeral will be at the Marylebone Cemetery, Finchley, on Saturday, at 2 o'clock.

DURING the session of the International Congress of Prehistoric Anthropology and Archæology, held at Monaco in 1906, a committee was appointed to secure uniformity of craniometric and cephalometric measurements. This aspect of the subject having been finally settled, the congress at a subsequent meeting at Geneva in 1912 adopted similar measures for the unification of anthropological measurements of the living subject. A translation of the rules thus adopted has been issued by one of its members, Dr. W. H. Duckworth, from the Anthropological Laboratory at Cambridge. The rules now authoritatively adopted define the position of the subject under examination and the classification of the measurements now approved. To these are added a general caution that no person should undertake work of this kind without undergoing a preliminary course of instruction, and a recommendation that anthropologists should append complete lists of measurements to their publications. The committee is to be congratulated on a scheme which will promote uniformity of measurement both of the living subject and of prehistoric remains discovered in the course of excavations.

THE Research Defence Society has issued (through Messrs. Macmillan and Co., Ltd.), at the modest price of 4d., an excellent pamphlet of fifty-six pages on sleeping sickness, by Dr. F. M. Sandwith. The author, after giving a brief historical account of the disease, describes fully the progress and present position of our knowledge with regard to the trypanosomiasis of animals and human beings in Africa, both in their clinical aspect and from the point of view of their etiology and causation. The problems that still require solution, and their practical bearing on administrative measures having as their object the prevention and control of these diseases, are set forth concisely and clearly. This little work should be extremely useful to those especially who, without an expert knowledge of these matters, are confronted with them in the performance of their official duties. At the same time, it furnishes a most striking example of the all-importance of experiments on living animals in order to obtain the knowledge necessary to combat effectually the most terrible of all plagues afflicting both men and animals in our African dependencies.

IN addition to interesting matter in the text, a recent number of *Country Life* contains an exquisite coloured plate of a dew-spangled web of the garden spider (*Epeira diadema*) and its owner.

ACCORDING to the fifth annual report of the American Bison Society, the herds of bison in the United States and Canada continue to show a gratifying increase, the total number of animals known to exist in the country at the date of the report being 2760, against 1310 four years previously.

IN the report of the Horniman Museum and Library for 1911 it is stated that considerable progress has been made in the arrangement of the collections. A large decrease in attendance is attributed to the hot summer of the year under review. In a footnote reference is made to the opening of the new building in January last.

The Field of November 9 contains a photograph of a "nest," or sleeping-platform, built high up in a tree adjacent to the ape-house by an orang-utan which escaped from captivity in the Zoological Gardens on the evening of Sunday, November 3. The ape probably intended to pass the night on the platform, but, either from fear of the keepers, or on account of the situation being too cold, changed his mind, and returned to the building.

WE have to acknowledge the receipt of a copy of a new and revised edition of Dr. Egid Schreiber's well-known "*Herpetologia Europæa*," which includes descriptions of all the species of amphibians and reptiles hitherto recorded from Europe. The present edition, published, like its predecessor, by G. Fischer, of Jena, forms a bulky volume of 960 pages, and is illustrated by a large number of text-figures, the price being 30s. It is of special importance on account of containing full notices of the varieties which have been described in the case of certain species. Another valuable feature is formed by the tables of the geographical ranges of all the species given near the end of the volume.

THE economic importance—either beneficial or injurious—of the various species forms the keynote in Prof. W. B. Barrows's "*Michigan Bird-life*," a fully illustrated volume of 822 pages, published by the Agricultural College of the State to which it refers. The volume is the outcome of ten years' labour, and appears thoroughly exhaustive, so far as the present state of knowledge goes. The seventy full plates have been prepared from specially selected photographs taken by a former student of the college. The author confirms previous statements with regard to the apparent extermination of the passenger pigeon, remarking that the last wild specimen known in the United States, so far as ascertained, was killed in September, 1898, in Mayne County, Michigan. The author is of opinion that the clearing of forests and the general opening-up of the country are largely responsible for the extinction of the species the result of this being that "the birds were driven from one place to another, and gradually compelled to nest further and further to the north, and under conditions successively less and less favourable, so that eventually the larger part of the great flocks consisted of old birds, which, through stress of weather and persecution, abandoned their nesting-places and failed to rear any considerable number of young."

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THE Glacial flora and fauna of the Grand Duchy of Baden have been investigated by Dr. P. Stark (*Berichte d. Naturforsch. Ges.*, Freiburg, Band xix., Heft 2), who has made a most painstaking study of the Glacial deposits in this area. The botanical portion of the work includes not only the flowering plants, but also the mosses, and not merely the relatively large remains such as stems and leaves, but such minutiae as pollen, spores, and fragments of epidermis. This careful study is of special interest from the ecological point of view, since it contains numerous contributions to the knowledge of moorland, alpine, and arctic vegetation during Glacial and post-Glacial times. The author shows commendable caution in the matter of inferring marked changes of climate from the succession of plant remains in the "Glacial" and "inter-Glacial" peat deposits, and lays stress on the need for taking into account ecological conditions other than variations in temperature in an attempt to explain the differences in the vegetation of the superposed beds.

THE Mexican cotton-boll weevil (*Anthonomus grandis*) has spread so rapidly in the southern States of America during recent years as to become the most serious pest with which cotton-growers have to contend. A detailed report on this insect and its ravages has been published by the Bureau of Entomology, U.S. Department of Agriculture (Bulletin 114), with twenty-two plates and thirty-four text-figures. An exhaustive account is given of the investigations carried on since 1895, the chief contents of previous publications on the boll-weevil being incorporated in this important memoir. The area infested by this pest has increased from 1400 square miles in 1892 to no fewer than 271,000 square miles in 1911, the average rate of spread during the last six years having been 27,000 square miles a year. At present 400,000 square miles of cotton-producing area remain unaffected, but the alarming rate of spread has led to the adoption of energetic measures for the repression of the weevil. The report is largely devoted to elaborate descriptions of the life-history, dissemination, and hibernation of the insect. Under the heading "natural control," the compilers describe the effects of temperature and other climatic conditions upon the weevil, the fungus and bacterial diseases (unfortunately very few and sporadic) to which it is subject, and the extent to which it is kept down by parasitic and predatory insect enemies and by birds. Finally, they enumerate the various methods of repression which have been tried; the most successful is that of destroying the weevils in autumn by uprooting and either ploughing-in or burning the cotton-plants.

THE first sheets of *The Geophysical Journal* for 1912 (second year) have reached us. This journal forms part of "The British Meteorological and Magnetical Year Book," issued by the Meteorological Office. It gives, as before, daily values for the meteorological and geophysical elements observed at three observatories—Kew, Valencia, and Eskdalemuir—and includes, *inter alia*, solar radiation, seismology, atmospheric electricity, and terrestrial magnetism (see NATURE, April 25). The new issue contains additional tables giving the results of the exploration of the free atmo-

sphere over the British Isles by means of kites and balloons. All the units employed are based on the C.G.S. system.

PROF. H. F. REID has suggested that the initial steps in the movement which gives rise to a great earthquake might be detected by the gradual displacement of a series of pillars erected along a line at right angles to a growing fault. Another method of foreseeing the occurrence of an earthquake has been suggested by Dr. C. Davison in a recent paper (Gerland's *Beiträge zur Geophysik*, vol. xii., 1912, pp. 9-15). The method depends on the distribution of the preliminary shocks in time and space. In the case of the Mino-Owari (Japan) earthquake of 1891, it is shown that there was a marked increase in frequency of these shocks along and near the line of the fault-scarp during the four years before the earthquake. During the two years before it, the centres of the earthquakes embraced the whole region of the fault-system, clinging closely to the principal fault-lines. Before the great displacement which causes an earthquake can take place, the small obstacles to slipping must first be removed. The slips by which these obstacles are removed give rise to the preliminary shocks. The effective resistance to displacement thus becomes equalised throughout the whole fault, so that the main displacement occurs with great rapidity throughout its entire extent. It follows, therefore, that when a fault is being outlined by the epicentres of a number of slight shocks, it is probable that a great displacement throughout the region so outlined will occur after an interval which, as in the case of the Mino-Owari earthquake, may amount to a couple of years.

FOR the detection of minor fluctuations of atmospheric pressure, differentiated from the general barometric changes, a microbarograph was designed some time ago by Dr. W. N. Shaw and Mr. W. H. Dines, and was referred to in these columns (*NATURE*, vol. lxxi., December 29, 1904, p. 216). Dr. Yoshida, of Tokyo, claims to have made some improvements in this instrument, and Prof. Fujiwhara, of the Central Meteorological Observatory, Tokyo, has developed a dynamical and adiabatic theory in connection therewith. The apparatus consists essentially of an air chamber, connected by tubes with a cylindrical vessel containing oil, in which floats a bell-jar. The latter rises and falls with the variations of atmospheric pressure, and an attached pen records the results on a revolving cylinder. A capillary tube serves to damp the effect of the larger and slower movements, only the smaller and more rapid variations being noted. Prof. Fujiwhara gives a series of equations based on his theory in the *Journal of the Meteorological Society of Japan* (xxxii., No. 9, 1912). He concludes that the dimensions and mass of the apparatus itself constitute an unavoidable source of error when the barometric variations are extremely rapid. To secure the best results he recommends that the apparatus be small, and the bell-jar and its attachments of the lightest material, e.g. aluminium.

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WHEN a liquid jet breaks into drops in the air it is well known that the drops become positively, the air negatively, charged. This effect is utilised in Kelvin's water-dropper as a means of generating electric charges, and in electrical measurements in the atmosphere to bring the instrument used to the same potential as the air at a point. The exact nature of the process by which the charges are produced is, however, unknown. The recent work of Dr. von Bernolák, of the University of Heidelberg, which appears in the *Annalen der Physik* for October, indicates that the production of the charge is intimately connected with the formation of very small secondary drops which accompany the primary drops. If the number of secondary drops formed is increased by producing large primary drops rapidly from a tube the lower end of which is widened, the total amount of charge produced is considerably increased.

THE *Electrical Review* for November 8 devotes three articles to the openings which China offers to engineers generally and to engineering manufacturers in particular. The latter are strongly urged to send out at once capable engineers as agents in order to grasp an opportunity which will pass rapidly away. One of the articles is by Prof. C. A. M. Smith, of the University of Hong Kong, and deals with the foundation and the aims of that University. From the statement of Sir F. D. Lugard, the Governor of Hong Kong, it appears that in the first instance engineering and medicine are to be the principal applied sciences taught there, while an arts course will afford an opportunity to Chinese students of making themselves well acquainted with English. A dispatch from the Viceroy of Canton to the chief officials of the Chinese Government under him is quoted by Prof. Smith, and from it we gather that considerable anxiety has been caused in China by the evil results which in some cases have followed the residence in Europe or America of Chinese students under conditions of freedom, to which they are quite unaccustomed in their own country. The new University will in all probability intercept this stream of students to foreign countries within the next few years. The drawing and plan in Prof. Smith's article indicate that the University buildings cover an area of 50,000 square feet, and occupy a fine site on a hill overlooking the harbour.

A SECOND edition of Mr. J. P. Johnson's "Prehistoric Period in South Africa" has been published by Messrs. Longmans, Green and Co. The first edition was reviewed in the issue of *NATURE* for August 10, 1911 (vol. lxxxvii., p. 183). The most important addition to the new edition is an appendix by Mr. Kennard, entitled "The Sequence of the Stone Implements in the Lower Thames Valley." In addition, Mr. Johnson has been able, as a consequence of the publication by Dr. Perinquey of the material in the Capetown Museum, to extend the scope of the book to the Coast Middens.

IN the 1912 volume of the Transactions of the Leicester Literary and Philosophical Society, which also contains the report of the council and annual

reports of the sections, the only two papers are concerned with literary subjects. The report of the council contains an announcement that the society has decided to publish a book on the Trias by Mr. T. O. Bosworth, a member of the geological section of the society, which should be of great assistance to students of the geology of the county.

A WELL-ARRANGED and excellently illustrated catalogue of their electrical specialties has been received from Messrs. F. Darton and Co., 142 St. John Street, Clerkenwell, E.C. Special attention may be directed to the large number of designs of small electric motors and dynamos this firm is able to supply. In addition, the catalogue gives particulars of a great variety of electrical appliances and accessories.

OUR ASTRONOMICAL COLUMN.

THE IDENTITY OF SCHAUMASSE'S AND TUTTLE'S COMETS (1912b).—Using new observations made by M. Schuamasse, and extending over the period October 18 to November 1, MM. Fayet and Schuamasse have derived a set of elements for comet 1912b which, when compared with the elements for Tuttle's comet, taking into account the approximate perturbations of Jupiter during the period 1900-01, show that the comets are undoubtedly identical. The comet is now too low to be observed in these latitudes, its positions for November 21 and 23 being $\alpha=11^h.43^m.$, $\delta=-37^\circ 14'7''$, and $\alpha=11^h.50^m.$, $\delta=-39^\circ 6'8''$, respectively. (*Astronomische Nachrichten*, No. 4612.)

BORRELLY'S COMET 1912c.—A number of observations of comet 1912c are published in No. 4612 of the *Astronomische Nachrichten*, where elements and an ephemeris, extending to December 9, are also given. An observation made at the Bergedorf Observatory on November 3 gave the magnitude as 7.5, and showed that the comet was a round nebulous body with a nucleus but no tail; other observations made between November 3 and 6 gave the magnitude as 9.5, while the calculated magnitude for November 7 was 8.3. Dr. Kobold's ephemeris gives the following positions:—

Ephemeris 12h. Berlin M.T.

1912	h.	α .	δ	1912	h.	α .	δ
Nov. 21...	19	30°2'...	+11°50'1"	Nov. 29...	19	53°1'...	+4°40'2"
23...	19	36°5'...	+9°49'9"	Dec. 1...	19	57°9'...	+3°11'6"
25...	19	42°4'...	+7°58'7"	3...	20	2°5'...	+1°49'4"
27...	19	47°9'...	+6°15'7"	5...	20	6°9'...	+0°33'1"

It will be seen that between November 22 and 27 the comet apparently travels along a line nearly parallel to, and about 3m. west of, that joining γ , α , and β Aquilæ; its calculated magnitude is now 9.0, and sinks to 9.5 by December 1.

OBSERVATIONS OF GALE'S COMET 1912a.—A number of observations, and some excellent photographs, taken by M. Quénnisset at Juvisy, of comet 1912a are published in the November number of *L'Astronomie*. On October 16 the principal tail (p.a.=65°) extended beyond the edge of the plate, and was at least 6° in length. The secondary tail (p.a.=138°) was strongly curved towards the south, having the appearance of a cock's spur, and was 1° long; the successive photographs, October 6 to 16, showed that the angle between these two tails was increasing by nearly 1° per day. A third tail, near to and north of the principal, was photographed on October 14, and showed a marked dislocation at a distance of 33' from the head. Several good spectra were secured with the Baume-Pluvinel prismatic camera, and will be reduced at

M. de la Baume-Pluvinel's laboratory. They show a strong continuous spectrum, in which the usual cometary bands are shown as well-marked condensations, and the spectrum somewhat resembles that of Brooks's comet (1911c) at the end of October, 1911.

On November 1 the comet was still just visible to the naked eye, and photographs showed the principal tail to be 6° long with extremely undulating borders; the angle (86°) between the two tails had still further increased to the extent of 13° since October 16. Other observations of this comet are published in No. 4612 of the *Astronomische Nachrichten*.

NEBULÆ AND CLUSTERS PHOTOGRAPHED WITH THE CROSSLEY REFLECTOR.—Lick Observatory Bulletin No. 219 contains descriptions of 132 nebulae and star clusters that have been photographed with the Crossley reflector. The descriptions in many cases are extremely interesting, and are written by Dr. H. D. Curtis, who states that the modern photographic studies of nebular structure show that the visual observations made in the past are almost valueless, in comparison, even when made with powerful instruments by skilful observers. For example, in the case of N.G.C. 83, the catalogue gives thirteen nebulae in this region, while in reality there are at least fifty small nebulae and nebulous stars.

One or two examples must serve to illustrate the importance of the present publication. N.G.C. 1300 shows a two-branched spiral, 6' long, where the whorls start from the extremities of straight extensions on each side of the nucleus. Nova Aurigæ on November 16, 1901, Nova Geminorum on April 23, 1903, and Nova Lacertæ on September 13, 1912, showed no traces of nebulosity, although long exposures were given in each case. With two hours' exposure the stars of Præsepe show no signs of being nebulous. N.G.C. 5921 is a very interesting spiral, with a strong oval nucleus 1'8" long, crossed by a straight lane of matter. N.G.C. 6960 is a wonderful object, more than 1° in length, made up of bright filaments like the "Network" nebula. N.G.C. 6914 is a very irregular diffuse nebulosity about 4' across. The neighbouring stars, BD.+41°3731 and 3737, are surrounded by bright nebulosity not noted in the N.G.C., although that around the second star is brighter than N.G.C. 6914.

CAPTAIN AMUNDSEN'S JOURNEY TO THE SOUTH POLE.

CAPTAIN ROALD AMUNDSEN communicated the results of his journey to the south pole at a meeting of the Royal Geographical Society on November 15, in the Queen's Hall. His expedition "landed" on the ice-barrier in the Bay of Whales, which, he observes, was charted by Ross in 1841; it is therefore to be considered, not as a casual formation of the ice, but as a permanent feature, owing its existence to shallow banks or to land beneath the ice but above sea-level. This view was confirmed by the discovery, on landing, of a surface broken by steep hills and ridges, instead of one approximately level and unbroken. The work of the expedition in laying depôts for the march to the south pole was completed in April, 1911, and it may be said at once that it was thoroughly successful, for when we follow Captain Amundsen on the journey itself it would appear (however thickly he glosses its dangers) to have been carried through with less difficulty than any of a similar character preceding it, so far as concerned food supply, the health of the party, and the condition of the sledge-dogs; there is here no tale of suffering from hunger or exhaustion, and on the return march from 86° S., the party had not even to go on fixed